

REMARKS

Claim 11 is made dependent upon claim 8.

Objection to Specification

An objection was made that U.S. Patent Application Publication No. 2001/0030004 by Kushida et al., referred to in paragraph 0004, was not found by the Examiner. A copy of the reference is enclosed. With regard to the Examiner's recommendation to reference U.S. Patent No. 6,379,831, this patent to Draper et al. relates to fuel cells and does not correspond to the publication discussed in paragraph 0004.

It is requested that the objection be withdrawn.

Objection to Claims

Claims 12 and 13 were objection to as dependent on a cancelled claim. Claim 12 is amended to depend on claim 8. Claim 13 depends on claim 12. In view of this, it is requested that the objection be withdrawn.

Claim Rejection based upon Nishikawa et al.

Claims 8-10, 12-25 and 27 were rejected under 35 U.S.C. § 103 as unpatentable over United States Patent No. 5,124,529, issued to Nishikawa et al. in 1992.

In Applicants' invention, a weld is formed between steel components using a filler metal that is formulated so that the weld contains an amount of martensite sufficient to offset shrinkage during cooling, preferably 20 to 60 percent. Martensite is a compound of iron and carbon, and thus the carbon concentration is critical to the formation of martensite. Accordingly, Applicants' filler metal contains a higher amount of carbon, between 0.05% and 1.0% carbon, to form the desired martensite phase. Moreover, in the preferred embodiment wherein low carbon stainless steels are welded, the higher carbon content prevents dilution of the adjacent steel that would otherwise affect the properties in the region of the weld.

Nishikawa et al. describes a welding wire that contains a metal having significantly lower carbon content. In the examples reported in Table 1, the carbon concentration is between 0.008 and 0.024%. At this low level, the metal in Nishikawa et al. is not adapted to form a significant martensite phase, a key constituent of Applicants' weld.

Moreover, the practitioner would appreciate that the higher carbon content also leads to form chromium carbide, which reduces the effectiveness of chromium in providing corrosion protection. Applicants' filler metal also contains titanium to inhibit

formation of chromium carbides. Nothing in Nishikawa et al. suggests the effect of titanium on the formation of chromium carbides, see col. 3, lines 38-51, mainly because the steel is intended to be formulated with a low carbon content. Thus, the practitioner, aware of the critical effect of carbon on iron alloys and the substantial effect on the properties, would not be lead by Nishikawa et al. to increase the amount of carbon in the metal.

Thus, Nishikawa et al. does not teach or suggest Applicants' filler metal.

Claim 8 is directed to Applicants' method that calls for a filler metal that comprises 0.05% to 0.1% C. Nishikawa et al. discloses a weld metal having a low carbon content. Further, in accordance with the claim, the weld comprises an amount of martensite sufficient to increase the volume of the weld to at least partially offset the shrinkage during cooling. The low carbon content in Nishikawa et al. does not result in a significant formation of martensite. Thus, Nishikawa et al. does not teach or even suggest Applicants' method in claim 8.

Claims 9-10 and 14-23 are dependent upon claim 8, and so not suggested by Nishikawa et al. at least for the reasons set forth with regard to that claim. The dependent claims recite additional features preferred in the practice of Applicants' invention. In particular, claims 9-10 and 21-22 recite preferred martensite proportions obtained by Applicants' welding method. Nothing in Nishikawa et al. discloses a weld containing the recited martensite proportions, or even a metal having a carbon content capable of

producing the recited martensite proportions.

Claim 24 is directed to Applicants' welded stainless steel article that includes a weld joint formed by stainless steel weld material having a composition similar to the filler material recited in claim 1, including 0.05% to 0.1% carbon. Further, the claims calls for a weld joint comprising 20-60 percent martensite. For the reasons above, Nishikawa et al. does not formulate a weld metal with the high carbon or with the high martensite phase. Thus, Nishikawa et al. does not teach or suggest Applicants' article in claim 24 or dependent claims 25 and 27.

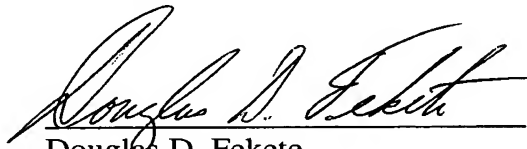
Accordingly, it is respectfully requested that the rejection of the claims based upon Nishikawa et al. be reconsidered and withdrawn, and that the claims be allowed.

Conclusion

If it would further prosecution of the application, the Examiner is urged to contact the undersigned at the phone number provided.

The Commissioner is hereby authorized to charge any fees associated with this communication to Deposit Account No. 50-0831.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Douglas D. Fekete", written over a horizontal line.

Douglas D. Fekete
Reg. No. 29,065
Delphi Technologies, Inc.
Legal Staff – M/C 480-410-202
P.O. Box 5052
Troy, Michigan 48007-5052
(248) 813-1210